

Appl. No. 10/035,868
Amendment dated March 24, 2006
Reply to Office action of January 12, 2006

Amendments to the Specification:

On page 1, please replace the paragraph from line 2 to line 3, under the heading of "FIELD OF THE INVENTION," with the following amended paragraph:

The present invention relates to a system and method for varying exposure time for different parts of a field field of view while acquiring an image.

On pages 12 to 13, please replace the paragraph from line 19 on page 12 to line 7 on page 13, with the following amended paragraph:

FIGs. 5 and 6 show an example process that may be performed to automatically select the areas to be masked and the corresponding exposure time for each selected area. FIG. 5 is a flowchart for the process 72 of analyzing the image to estimate the optimum exposure time for each portion of the field of view and to establish groups of mirror elements 60 for use in actively masking portions of the image and varying the masking areas as needed as the exposure time varies. Beginning at the start of the flowchart in FIG. 5 (start block 74), a counting variable "n" is set or reset to a value of one (initialization block 76). Then, if the shutter is not already closed, the shutter is closed (action block 78) to prevent light from entering the device 40. Next and in parallel, a timing clock is reset to zero (initialization block 80), the CCD is reset (any prior charges flushed out) (initialization block 82), the first predetermined threshold level (corresponding to $n = 1$) is obtained from a lookup table in memory (data retrieval block 84), and the first time limit (for $n = 1$) is obtained from a lookup table in memory (data retrieval block 86). Next, it is determined whether the current value of n is equal to one (decision block 88), which it is because the process just started. Because the process has just started ($n = 1$), all mirror elements are set to the first position (action block 122 90), which is the default (relaxed) position in this case. The shutter is then opened (action block 92). Then, immediately (or simultaneously with the opening of the shutter), the

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timing clock is started (action block 94) and the device begins recording the image reflected from the DMD 50 and exposed onto the CCD 52 (action block 96).

On pages 13 to 14, please replace the paragraph from line 22 on page 13 to line 9 on page 14, with the following amended paragraph:

Returning to decision block 98 in FIG. 5, if or when the charge level somewhere on the CCD 52 exceeds the current threshold level, the timing clock is stopped (action block 106) and the shutter is closed (action block 108). The shutter is closed at this point (rather than later) so that the CCD 52 can begin to be reset. The time elapsed on the timing clock is then stored in an exposure time (n) variable (data storage block 110). Next the area or areas in the field of view on the CCD 52 that exceeded the current threshold level are identified (action block 112). Then the location addresses of the mirror elements 60 on DMD 50 corresponding to the area or areas identified in the field of view of the CCD 52 are stored as the next mirror elements group (e.g., mirror elements group (2) corresponding to $n = 2$) (data storage block 114). Next, it is determined whether there are any of the mirror elements 60 remaining that have not been assigned to a mirror elements group (decision block 116). If there are still mirror elements 60 that have not been assigned to a mirror elements group (decision block 116), then the location addresses stored for the mirror elements group (n) are added into the mirror elements group (n+1) (action block 118). Thus, each subsequent mirror elements group will contain any new mirror element location addresses identified, as well as all of the prior mirror element location addresses for all prior mirror elements groups. Hence, as the process progresses, the area of the image masked should be increasing until eventually all (or most all) of the mirror element location addresses have been assigned to a mirror elements group.

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On page 14, please replace the paragraph from line 10 to line 18, with the following amended paragraph:

Next the value for n is incremented by adding one ($n = n + 1$) (action block 120), and the process repeats again (see initialization block 80). The second time through the process, n will equal 2 (see decision block 88), and the mirror elements for the current mirror elements group (corresponding to $n = 2$) are actuated to a second position (action block 90 ~~122~~). Thus, when the image is reflected ~~reflect~~ off of the DMD 50, the portions of the image field of view that hit the mirror elements in second position will be masked from the CCD 52. In other words, the remainder of the image in the field of view will be reflected to the CCD 52 by the remaining mirror elements in the default first position. Therefore, during masking, only a portion of the field of view will expose the CCD 52 and the brighter portions will be masked.

On page 22, please replace the paragraph from line 18 to line 19, with the following amended paragraph:

In any embodiment of the present invention, one or more lenses may be place within the path of the image light rays before and/or after any of the SLM devices used. Although only